



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,914	09/11/2003	David Wayne Jennings	194-28620-US	6010

24923 7590 03/13/2006

PAUL S MADAN  
MADAN, MOSSMAN & SRIRAM, PC  
2603 AUGUSTA, SUITE 700  
HOUSTON, TX 77057-1130

EXAMINER

FIGUEROA, JOHN J

ART UNIT PAPER NUMBER

1712

DATE MAILED: 03/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/659,914

Applicant(s)

JENNINGS, DAVID WAYNE

Examiner

John J. Figueroa

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12/19/03 & 2/2/04.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 16 and 17 are objected to under 37 CFR 1.75(c) as being an improper multiple dependent claim because it refers back to two distinct features of the invention, namely, the method of claim 15 and the paraffin inhibitor composition of claim 1. See MPEP § 608.01(n). Appropriate correction is required.
2. Claims 21 is objected to under 37 CFR 1.75(c), as not further limiting the subject matter of a previous claim. Claim 21, which depends from claim 19, does not appear to further limit the invention encompassed by claim 20, which also depends from claim 19. The specification on page 7, lines 29-30, states that "the hydrocarbon component [of the formation fluid is] commonly referred to in the art as crude oil or gas condensate ...".

Thus, if according to the specification, "crude oil" and "gas condensate" are commonly used terms for the same hydrocarbon component of the formation fluid, it is unclear as to the distinction between the metes and bounds of the invention encompassed by claim 20 and claim 21.

Applicant is required to cancel claim 20 or claim 21, amend the claims (or the specification) to place the claims in proper dependent form, or rewrite one of the claims in independent form.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

Art Unit: 1712

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 1 (and claims 2-21 which depend therefrom) is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to enable one of ordinary skill in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 1 is drawn to a composition comprising a polymer and two solvents, namely, a "weak to moderate wax solvent" and a "strong wax solvent." However, the specification does not provide sufficient guidance for a person of ordinary skill in the art to determine as to which category ("weak to moderate" or "strong") to classify a solvent based on their degree of wax solubility. The only guidance provided in the specification (page 5, lines 11-21) merely states that the "weak to moderate" solvents are those in which "a wax would have limited solubility such as a single ring aromatic compound", whereas the strong wax solvents are "organic liquids in which waxes would have *comparatively* greater solubility than the weak to moderate solvents." [Emphasis added]

The examples provided by the specification for the "weak to moderate solvents" are merely a list of six aromatic hydrocarbon solvents (non-polar to weakly polar solvents), whereas for the "strong wax solvents" the specification simply lists three aliphatic cyclic hydrocarbon solvents (also non-polar to weakly polar solvents) **and** carbon disulfide (a polar aprotic solvent).

Because it is customary in the art to classify solvents based on their polarity, it is vague and confusing as to how to distinguish between the two categories of solvents recited in claim 1 due to both categories containing non-polar to weakly polar solvents. In view of the specification, one skilled in the art would not be able to determine, without undue experimentation, as to which category a particular solvent (such as, acetone, a glycol or a lower aliphatic/alicyclic alcohol) would fall under without measuring its wax solubility and *comparing* it to the solvents listed in the specification.

Consequently, claim 1 is not enabled by the specification because a person of ordinary skill in the art would be unable to practice the invention encompassed by the claim without undue experimentation.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "modified" in claim 8 is a relative term that renders the claim indefinite. It is not clear from the claim or from the specification as to what constitutes a *modified* ethylene/vinyl acetate copolymer. The term "modified" as used in the claim is vague and indefinite because there is no guidance in the specification to determine the degree of modification of said copolymer that is encompassed by the claims.

Art Unit: 1712

Because it is customary in the art to classify solvents based on their polarity, it is vague and confusing as to how to distinguish between the two categories of solvents recited in claim 1 due to both categories containing non-polar to weakly polar solvents. In view of the specification, one skilled in the art would not be able to determine, without undue experimentation, as to which category a particular solvent (such as, acetone, a glycol or a lower aliphatic/alicyclic alcohol) would fall under without measuring its wax solubility and *comparing* it to the solvents listed in the specification.

Consequently, claim 1 is not enabled by the specification because a person of ordinary skill in the art would be unable to practice the invention encompassed by the claim without undue experimentation.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "modified" in claim 8 is a relative term that renders the claim indefinite. It is not clear from the claim or from the specification as to what constitutes a *modified* ethylene/vinyl acetate copolymer. The term "modified" as used in the claim is vague and indefinite because there is no guidance in the specification to determine the degree of modification of said copolymer that is encompassed by the claims.

Art Unit: 1712

Therefore, because the specification does not provide a standard for ascertaining the requisite degree of modification of the copolymer, one of ordinary skill in the art would not be reasonably appraised of the scope of the claimed invention.

7. Claims 18, and 19-21 that depend therefrom, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 18 recites the limitation "paraffin inhibitor of claim 1" in line 2. It is not clear from the claim language as to whether this limitation is referring back to the "paraffin inhibitor *composition*" (preamble of claim 1) or, alternatively, to the "*polymer* having the characteristic of *inhibiting paraffin* crystalline growth" which is a component of said composition.

8. Claims 19, and 20-21 that depend therefrom, recite the limitation "includes both the aqueous and hydrocarbon components" in lines 1-2 of claim 19. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-2, 4, 9-14 are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent Number (USPN) 3,563,315 to Clayton, Jr. et al. (hereinafter "Clayton").

Clayton discloses a method for treating a well having its metal surfaces, and the formation contained therein, exposed to corrosion/paraffin deposition by contacting said metal surfaces/formation with a composition comprising an amine corrosion inhibitor, 5-99% by weight of carbon disulfide and 0-99% of a liquid hydrocarbon, such as benzene, xylene or the like. (Col. 1, lines 24-43; col. 2, lines 4-10 and lines 50-75; col. 3, lines 45-55; col. 4, lines 9-26 and lines 32-51; Table II)

Although Clayton does not specifically disclose pour points for the disclosed composition, because the composition disclosed in Clayton and that encompassed by the instant claims are the same, then the composition disclosed in Clayton must inherently possess the same physical properties, such as pour points, as the composition recited in the instant claims.

Thus, the claims are anticipated by Clayton.

11. Claims 1-7 and 12-21 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 5,536,706 to Kallenbach et al. (hereinafter 'Kallenbach') as further evidenced by USPN 4,076,728 to Maulding (hereinafter 'Maulding'), USPN 4,645,585 to White (hereinafter 'White') and USPN 5,847,018 to Blanpied et al. (hereinafter 'Blanpied').

Kallenbach discloses a process for inhibiting the deposition or precipitation of wax (paraffin) in a hydrocarbon fluid, said process including combining an effective amount of an inhibitor and with the hydrocarbon fluid. (See Abstract; col. 2, lines 1-6 and 17-26) Kallenbach discloses that the hydrocarbon fluid can be crude oil, shale oil, gas well condensates, synthetic crude oil and mixtures thereof; and that the polymer/composition can be applied to the hydrocarbon fluid at any time during the



Art Unit: 1712

production process, such as downhole during production/recover, at the well-head, to a produced fluid either before or during treatment, directly to a hydrocarbon fluid prior to transportation or to a hydrocarbon fluid in a conduit. (Col. 2, lines 55-61; col. 3, lines 25-38)

Kallenbach further discloses that the polymer is dissolved in a solvent and that a suitable solvent can be an aliphatic hydrocarbon solvent, such as cyclohexane or naphtha; an aromatic hydrocarbon solvent, such as toluene, xylene, ethylbenzene or aromatic naphtha; or a mixture of said solvents, such as a mixture of cyclohexane, toluene and/or xylene. (Col. 3, lines 38-52; col. 8, lines 12-30; col. 9, lines 3-18)

It is well known in the art that naphtha contains decalin and that it is the source of other cyclic hydrocarbons, such as cyclopentane and cyclohexane. (See, e.g., Maulding, col. 2, lines 65-68, teaching naphtha containing cycloparaffins, such as cyclohexane and cyclopentane; White, Table 2, col. 10, lines 9-27, teaching naphtha containing decalin; and Blanpied, col. 2, lines 31-36, teaching that a conventional route for producing cyclopentane is through its recovery from naphtha)

In Example II, Kallenbach discloses the reduction of wax deposition in a hydrocarbon fluid by treating said hydrocarbon fluid with a paraffin inhibitor composition, said composition comprising a butadiene/styrene copolymer (from Example I) as the paraffin inhibitor, toluene and cyclohexane. (Col. 5, lines 11-21 and 35-49; col. 5, line 54 to col. 6, line 33; Table II)

Although Kallenbach does not specifically disclose pour points for the disclosed composition, because Kallenbach's composition and that encompassed by the instant

Art Unit: 1712

claims are the same composition, then Kallenbach's composition must inherently possess the same physical properties, such as pour points, as the composition recited in the instant claims.

Thus, the claims are anticipated by Kallenbach.

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. Claims 1-8 and 12-21 are rejected under 35 U.S.C. 102(e) as being anticipated by USPN 6,593,426 to Krull et al. (hereinafter 'Krull') as further evidenced by Maulding, White and Blanpied.

Krull discloses a method for improving the cold flow properties of a middle distillate/crude oil and preventing paraffin formation in a hydrocarbon/fuel oil by treating the distillate or fuel fluid with a solution containing a polymeric additive, said additive comprising a blend of copolymers and dissolved in an aliphatic and/or aromatic solvent. (Col. 3, lines 6-14 and 18-22; col. 4, lines 17-23; col. 8, lines 22-24; col. 7, line 62 to col. 8, line 8; col. 9, lines 16-26)

Krull further discloses the polymeric additive to be a blend of copolymers wherein a copolymer can be, for example, an olefin/maleic ester, ethylene/vinyl acetate, modified ethylene/vinyl acetate or alkyl acrylate. (Abstract; col. 3, line 18 to col. 4, line

Art Unit: 1712

17; col. 9, lines 49-67) In addition, the copolymer blend additive can be combined with other paraffin inhibitors, such as an alkylphenol resin or maleic anhydride copolymer, to form a mixture to provide a paraffin inhibiting composition. (Col. 8, line 39 to col. 9, line 13)

Krull further discloses that suitable solvents for the copolymer blend additive are aliphatic/aromatic hydrocarbons and mixtures thereof, such as kerosene, toluene, naphtha (containing cyclopentane, cyclohexane and decalin as discussed above in paragraph #11), xylene or ethylbenzene; or commercial solvent mixtures, such as SOLVENT®NAPHTHA, SHELLSOL®AB, SOLVESSO®150 or 200, ISOPAR® and EXXSOL® which are mixtures of aromatic and aliphatic hydrocarbons. (Col. 7, lines 6-11; col. 8, lines 17-34)

As stated above in paragraph #11, Maulding, White and Blanpied teach that naphtha contains alicyclic hydrocarbons such as cyclopentane, cyclohexane and decalin.

Krull does not specifically disclose pour points for the paraffin inhibiting composition. However, because Krull and the instant claims encompass the same composition, then the compositions disclosed in Krull must inherently possess the same physical properties, such as pour points, as the compositions recited in the instant claims.

Thus, the claims are anticipated by Krull.

***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krull in view of USPN 6,670,414 B2 to Shiraishi et al. (hereinafter 'Shiraishi').

Krull was discussed above in paragraph #13. Krull discloses a composition of an ethylene/vinyl acetate copolymer paraffinic inhibitor dissolved in an aromatic/aliphatic hydrocarbon solvent mixture of, for example, toluene/xylene and cyclohexane. Krull does not specifically disclose the percent weight ratios for the aliphatic and aromatic components of the solvent mixture.

Shiraishi teaches dissolving an ethylene/vinyl acetate copolymer in an aromatic/alicyclic hydrocarbon solvent mixture, wherein the aromatic hydrocarbon is xylene or toluene, and the alicyclic hydrocarbon is cyclohexane, and wherein the weight ratio of the aromatic to aliphatic hydrocarbon solvent is from 90/10 to 60/40. (Col. 5, lines 22-28) Shiraishi further teaches that using this solvent mixture to dissolve the copolymer enhances the preservation stability of the copolymer resin. (Col. 5, lines 28-29)

Accordingly, it would have been obvious to a person of ordinary skill in the art, at the time of the claimed invention, to dissolve Krull's ethylene/vinyl acetate copolymer

Art Unit: 1712

blend in a solvent mixture having a toluene (or xylene) to cyclohexane weight ratio of 60/40 to 90/10. One skilled in the art would have been motivated to do so by Shiraishi in order to attain a paraffin inhibitor composition having enhanced preservation stability and thus, more cost-effective and longer-lasting.

### ***Conclusion***

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

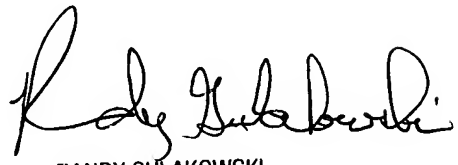
Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Figueroa whose telephone number is (571) 272-8916. The examiner can normally be reached on Mon-Thurs & alt. Fri 8:00-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1712

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JJF/RAG



RANDY GULAKOWSKI  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700